July 25, 2016

George Papadopoulos
EPA Office of Ecosystem Protection
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Mailcode OEP 06-1
Boston, MA 02109-3912
Via Email: papadopoulos.george@epa.gov

RE: DRAFT AUTHORIZATION TO DISCHARGE UNDER NPDES FOR ENTERGY'S PILGRIM NUCLEAR POWER STATION (NPDES PERMIT NO. MA0003557)

Dear Mr. Papadopoulos,

On behalf of Pilgrim Watch, the following comments concern the above referenced Draft National Pollution Discharge Elimination System (NPDES) Permit for the Pilgrim Nuclear Power Station.

Pilgrim Watch ("PW") is a non-profit citizens' organization that serves the public interest on issues regarding the Pilgrim Nuclear Power Station. The organization is located at 148 Washington Street, Duxbury, Massachusetts, 02332. Its membership extends throughout the Commonwealth.

Overview

PW incorporates in full the comments provided by Cape Cod Bay Watch/ Jones River Watershed Association and those submitted by the Association to Preserve Cape Cod. Highlights include, for example:

- The draft permit should not allow the continuation of Pilgrim's once-through-cooling system. It is harmful to the marine environment and not the best technology available, as required. If EPA does not require a closed cooling system, as it should, then a Beaudrey WIP system should be installed during the refueling outage 2017.
- EPA should require Entergy to fund a mitigation account for restoration and monitoring work in Cape Cod Bay to "pay back" for the 20+ year delay is reissuing the permit and the consequent environmental harm due to Pilgrim's continued use of a once-through cooling system when better technology was available. Mitigation and monitoring must occur throughout the decommissioning process.
- EPA's analysis does not consider, but must, the impacts of climate change – warming seas, sea level rise, storms, flooding and increased precipitation that likely will cause further pollutant discharges into Cape Cod Bay and heighten the effects of thermal pollution.
- EPA's analysis needs to be expanded regarding the impact on protected species, including endangered shore birds such as Rosette Terns, over the next 60 or so years. It is likely that

species distribution and composition in Cape Cod Bay has changed due to human activity, climate change and other factors and EPA should take this into account when assessing Pilgrim's impacts.

- EPA's analysis does not consider, but must, the impact of increased levels of acidity in ocean water due to pollution. The increased acidity adds to the other site specific factors that cause corrosion of buried components on site and hastens leakage that absent vigorous monitoring will end up in the bay.
- EPA must expand its monitoring locations to include, for example Outfall 013 which drains into Cape Cod Bay during extreme storm events and storm outfalls 004,005,006, 007. Climate change will increase the frequency and severity of storms and heavy precipitation. Also EPA should test all 25 electrical vaults at least annually and more frequently if reading indicate for the same reasons. EPA is requiring a 1-time test for all 25 but all 25 should be tested before a monitoring plan is developed so they know what's there; and then more than just 5 vaults should be tested regularly- 5 is not enough.
- EPA must require that all Entergy's effluent limits is reported publically in monthly discharge reports.
- EPA must require that thermal discharge temperature readings are electronic and continuous and public access to those readings available online. Entergy must be required to report the highest level recorded each month - not simply an average. EPA should consider restrictions. Thermal backwash discharges restricted to high tides if harmful impacts are shown to increase at low tide.
- EPA should specify that the permit cannot be transferred to another company without the public review process.
- EPA's analysis does not consider, but must, the likely impacts of Pilgrim's decommissioning process so that EPA's permit shall include requirements to mitigate and monitor the expected environmental challenges during post operations - extending perhaps for 60 years.

Decommissioning

The decommissioning process allowed by NRC greatly increases the probability of contamination of pollutants flowing into Cape Cod Bay. Therefore EPA must fine tune its draft to account for challenges presented by decommissioning; and EPA and DEP must be vigilant during this long decommissioning period, spanning potentially 60 years, and commit to adhering to the 5-year schedule for reissuing the permit in order to reassess and enact appropriate new requirements.

<u>Decommissioning & Pollution Cape Cod Bay</u>

SAFSTOR: Pilgrim announced that it will follow the decommissioning option SAFSTOR-mothball the plant for up to 60 years, to 2079. During those years, there will be ample opportunity for contaminants to migrate offsite unless EPA expands its monitoring program and provide public reports. Simply consider the facts that: (1) Contamination is onsite now. There is historical

evidence of oil spills, for example. (2) Pilgrim was built from 1967-1970. Some of Pilgrim's buried structures, pipes and tanks are original and that makes those components over 46 years old today. Fifty years post shutdown, they will be 100 years old or more. Corrosion is a function of age. Many of those components contain hazardous materials and are constructed of concrete and steel- both materials corrode. Pilgrim's site specific environment is corrosive.

NEPA: Will Entergy be required to perform an environmental assessment following shutdown? It is unlikely that NRC will require Entergy to perform a NEPA analysis at the outset of the decommissioning process; instead, based on lessons learned from Vermont Yankee, NRC will allow Entergy to rely on environmental impacts addressed in its environmental analyses done during the license renewal process. Those analyses are outdated and do not bound all the environmental impacts associated with decommissioning.

Actual characterization of Pilgrim's site is not required to be submitted until 2 years before license termination, perhaps as late as 2077. How much pollution will have the opportunity to "escape" over those intervening years? In order to protect against pollutant discharges into Cape Cod Bay, EPA must push for a NEPA analysis at the outset of the decommissioning process and include in its NEPDES more robust monitoring requirements.

PSDAR: After closure, Entergy will issue a post shutdown report but it does not include impacts associated with non-radiological contaminants and the generation and storage of non- radiological wastes. Thus, the PSDAR fails to provide sufficient information to allow EPA, the State, and the public to assess all of the environmental impacts associated with Entergy's decommissioning activities. EPA must step in here and "fill in the blanks" as they relate to pollutant discharge into Cape Cod Bay. After issuance of Entergy's PSDAR, EPA must get to work on a re-issued permit.

Component Removal: Major radioactive components, such as the reactor vessel, steam generators, or other components that are comparably radioactive are removed, other structures will remain. Structures that are removed are only removed to 3 feet below grade. Rubbilization is permitted. These facts indicate a very high likelihood of pollutant discharge. The discharge will go into Cape Cod Bay due to the slope of the property.

Corrosion and Contamination from buried structures onsite - submerged foundations, buried tanks and pipes.

These structures are subject to corrosion. Pilgrim was built 1967-1970. Many of these buried components are over 40 years old now. They likely will remain onsite for 50 years post shutdown making them over 100 years old at that date; and some will remain onsite indefinitely. The inevitable result is increased contamination of Cape Cod Bay. Absent a vigorous monitoring system the damage is likely to be extensive.

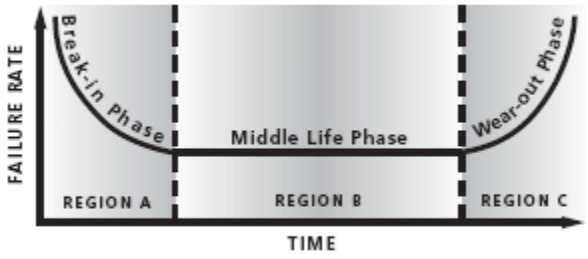
Consider for example that there are 6 fuel oil tanks and their associated lines to send the oil into buildings underground at PNPS. There are 2 for the heating boilers, 2 for the emergency diesel generators, and 2 for the station blackout diesel. They can and most likely will leak with time and when they do they would cause an environmental mess.

Corrosion:

Materials: The buried structures and components are made of corrosive materials-concrete and carbon steel. All metals corrode.

Age: Aging and corrosion go together. The older the component or tanks/pipes are the more likely it is that corrosion will occur. Pilgrim was built from 1967-1970. Many components are original.

Figure 1 The Bathtub Curve



Source: NASA, 2001.

Engineers explain the aging phenomenon by using what is known as the "Bathtub Curve." The curve is a graph of failure rate according to age. The failure rate due to unidentified leaks is relatively high in the beginning when "kinks" are being worked out; it flattens out during the middle life phase; and it rises again sharply in the end-of-life or at the "wear-out phase." On average, 20- 30 years usually marks the beginning of the wear-out phase. The evidence shows that most of Pilgrim Station's buried components would be in this "wear out phase" now and well beyond during decommissioning. The rate of corrosion is not linear over time. Even the most meticulously maintained systems, like the Space Shuttles, which are a much newer engineered technology than Pilgrim, are reaching the end of their useful life due to the aging phenomena of the Bathtub Curve."

Pilgrim's site specific environment is corrosive: For example the soil is wet and will increasingly be so due to the impacts of climate change -increased severe storms, more frequent and severe precipitation and rising sea levels and groundwater tables - all resulting in flooding. Cathodic depolarizers are in the soil. An important condition for corrosion is chloride. Pilgrim sits on the shoreline and chloride is naturally abundant in seawater. Underground corrosion is amplified by stray currents which are present in one degree or another at power generating stations. Pilgrim's soils are sandy. Sand and soil particles move in the subsurface and are abrasive; the buried pipes

were initially packed in a sand bed. Corrosion occurs on the inside of the components. The rate of degradation on interior surfaces is a function of aggressive chemicals, pH level, dissolved oxygen and biological elements.

The Buried Piles and Tanks Aging Management Program during license renewal 2012-2019 is inadequate. Buried components are inspected when excavated during maintenance -leaving inspection to happenstance. A focused inspection will be performed within the first 10 years of the period of extended operation, unless an opportunistic inspection (or an inspection via a method that allows assessment of pipe condition without excavation) occurs within this ten-year period. A one-time inspection in ten (10) years incorrectly assumes that corrosion is gradual, linear and predictable. Consider that the vast majority of the buried pipes and tanks will be more than 47 when operations cease in 2019; and approximately 97 years old fifty years after operations cease and cleanup begins. EPA must assure more frequent inspections and monitoring.

Water Chemistry and Service Water Programs. During license renewal proceedings, Entergy claimed that the chemistry and service water programs are effective in preventing internal corrosion. If they were effective, leaks would not occur throughout the industry and at Pilgrim historically. The program will not continue into the lengthy post shutdown period.

Industry Experience: Industry experience nationwide shows that there has been a proliferation of leaks from buried components around the country and will continue during operations and following shutdown. –lessons learned from Entergy's Vermont Yankee reactor.

Conclusion

Bottom line, there are no credible arguments for allowing Pilgrim Station to continue with its outdated and ecologically damaging once-through-cooling system. It does not meet the standards set by the Clean Water Act and State Water Quality Standards. Climate change impacts are compounding the damage. As we have shown, ecological harm does not end when Pilgrim's operations end. Therefore, throughout the full decommissioning period, regular assessments are required along with an expanded monitoring program with public reporting.

Thank you for your consideration.

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